DEPARTMENT OF TRANSPORTATION SERVICES

MUFI HANNEMANN
MAYOR

CITY AND COUNTY OF HONOLULU

650 SOUTH KING STREET, 3RD FLOOR
HONOLULU, HAWAII 96813
Phone: (808) 768-8305 • Fax: (808) 768-4730 • Internet: www.honolulu.gov

WAYNE Y. YOSHIOKA
DIRECTOR

SHARON ANN THOM
DEPUTY DIRECTOR

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RT10/09-338004

Ms. Kim Kido
1348 Alewa Drive
Honolulu, Hawaii 96817

Dear Ms. Kido:

Subject: Honolulu High-Capacity Transit Corridor Project
<u>Comments Received on the Draft Environmental Impact Statement</u>

The U.S. Department of Transportation Federal Transit Administration (FTA) and the City and County of Honolulu Department of Transportation Services (DTS) issued a Draft Environmental Impact Statement (EIS) for the Honolulu High-Capacity Transit Corridor Project. This letter is in response to substantive comments received on the Draft EIS during the comment period, which concluded on February 6, 2009. The Final EIS identifies the Airport Alternative as the Project and is the focus of this document. The selection of the Airport Alternative as the Preferred Alternative was made by the City to comply with the National Environmental Policy Act (NEPA) regulations that state that the Final EIS shall identify the Preferred Alternative (23 CFR § 771.125 (a)(1)). This selection was based on consideration of the benefits of each alternative studied in the Draft EIS, public and agency comments on the Draft EIS, and City Council action under Resolution 08-261 identifying the Airport Alternative as the Project to be the focus of the Final EIS. The selection is described in Chapter 2 of the Final EIS. The Final EIS also includes additional information and analyses, as well as minor revisions to the Project that were made to address comments received from agencies and the public on the Draft EIS. The following paragraphs address comments regarding the above-referenced submittal:

The Kaimuki-Waialae and Salt Lake-Aliamanu areas listed in your comment contain approximately 40 percent of the island's population of 876,200 people, and they contain approximately 61 percent of the population within the transit corridor. The remaining corridor area contains approximately 39 percent of the population. Shortening the route will fail to serve a substantial population.

As stated in Chapter 4, Section 4.2.3 of the Final EIS, the farmlands that will be acquired for the Project are in the Ewa Plain. The Ewa Development Plan designates areas for dense *development while preserving other areas for agriculture. A maximum of 80 acres of prime farmland and 8 acres of statewide-important farmlands will be acquired by the Project, of which 70 acres are actively cultivated. All of the affected properties designated as prime, unique, or of statewide importance and/or actively farmed are owned by individuals, corporations, or agencies that plan to develop them in conformance with the Ewa Development Plan.*

One of the two alternatives for a maintenance and storage facility is in agricultural-related use (Aloun Farms). The other potential maintenance and storage facility is located near Leeward Community College and is the site of a former Navy fuel storage and delivery facility. The Leeward Community College location is the preferred location for the maintenance and storage facility, and RTD has been working with the Navy to acquire it. If the City can acquire this site, only 47 acres of land designated as prime or of statewide importance will be used for the Project.

The displacement of agricultural lands as a result of the Project represents less than one-tenth of one percent of available agricultural land. The Project's effect will not be substantial and no mitigation will be required.

As stated previously, the proposed maintenance and storage facility site in Ewa is about half the amount of farmland required for the Project. If DTS can acquire the Leeward Community College site, only 47 acres of land designated as prime or of statewide importance will be used for the Project.

As stated in the Final EIS Section 4.2.3, some land uses will need to change in order to accommodate the Project; however, impacts to the natural and built environment are minimized whenever possible. Zoning changes are at the discretion of the City's Department of Planning and Permitting.

The Ewa Development Plan recognizes that agricultural land should be protected and designates areas for dense development while preserving other areas for agriculture. As discussed in response to a previous comment, the displacement of agricultural lands as a result of the Project represents less than one-tenth of one percent of available agricultural land. The Project's effect will not be substantial and no mitigation will be required.

The 88 acres of prime and statewide important farmlands referenced in Table 4-1, Summary of Direct Environmental Effects and Mitigation Measures to Avoid, Minimize, or Reduce Impacts, in this Final EIS is limited to the transit project and does not include the development of the adjacent properties. These adjacent properties are designated for development in the Ewa Development Plan.

As discussed in Section 4.19.2, within station areas, the Project combined with supportive public policies and favorable real estate market conditions could attract transit-supportive development (TSD) and transit oriented development (TOD). The Ewa Development Plan stresses development in concert with a transit system. Although the addition of transit does not directly cause development to occur, plans and policies will encourage new development to be located near transit stations to take advantage of the transportation infrastructure and increased accessibility if a new transit line is built. It is not expected that the Project will lead to *an increase in the overall level of growth allowed or expected in the study corridor. Rather, it will focus the growth into patterns that will increase the number of viable travel options available.*

As stated previously, the Ewa Development Plan recognizes that agricultural land should be protected and designates areas for dense development while preserving other areas for agriculture. The transit system will help focus development in designated areas.

Much of the farmland acreage that could be acquired for the Project is located at one of the two alternatives for a maintenance and storage facility. The preferred alternative is a former Navy fuel storage and delivery facility near Leeward Community College. If it is acquired, agricultural land used for the project will be about 47 acres. The Final EIS identifies the existing land use, and where information is available, planned future use of land that would be affected by the Project.

The agricultural land in question is planned to be developed, independently of the proposed Project. The land is not planned to remain in agriculture and the impacts of loss of agricultural land have been or are being addressed in the entitlement process for the planned development. There are no legal or regulatory requirements to replace agricultural land as there are regarding impacts to wetlands. The Project has been designed in compliance with the Ewa Development Plan.

Regarding No. 1 on your list, among the Project goals and objectives (Table 1-4 of this Final EIS) is to "improve access to planned development to support City policy to develop a second urban center." The Final EIS shows estimated traffic volumes for year 2030. Traffic is expected to grow with or without the Project being constructed. However, as indicated in Section 3.4.1 of the Final EIS, vehicle miles traveled (VMT), vehicle hours traveled (VHT), and vehicle hours of delay (VHD) are projected to decrease under the Project as compared to the No Build Alternative. VMT is computed by multiplying the number of trips using a roadway by the facility's total length in miles. VHT is derived by multiplying the number of trips using a roadway by the travel time for each travel period. VHD is calculated by finding the difference between the congested VHT and the VHT that would be expected under free-flow conditions. Table 3-14, Islandwide Daily Vehicle Miles Traveled, Vehicle Hours Traveled, and Vehicle Hours of Delay—Existing Conditions, No Build Alternative, and the Project, in this Final EIS shows an 18 percent reduction in VHD with the Project compared to the No Build Alternative.

Regarding No. 2, as indicated in Table 3-20, Daily Mode of Access to Project Stations—2030, in this Final EIS, overall access to public transit will be enhanced with the Project. A substantial portion of project riders will access the system by local bus and by walking and biking to the station. Bus, walk, and bike access to stations will account for approximately 90 percent of total trips in the a.m. peak period. Access to stations will be enhanced by accommodating bicyclists and pedestrians. Several stations will be located near existing or planned bicycle facilities. The Oahu Bike Plan is currently being updated and is scheduled to be adopted in 2010. The Draft Master Plan includes a prioritized list of bicycle projects developed using criteria that includes access to transit. Several projects that would connect existing or future bicycle facilities to rail transit stations are included in the Draft Master Plan.

Regarding No. 3, as presented in Chapter 3 of the Final EIS, the Project will result in reduced VMT, fewer hours of delay, and higher shares of total travel when compared to No Build *conditions. As stated in Section 3.4.2 of the Final EIS, more than 40,000 automobiles will be removed from roadways as a result of the Project, compared to the No Build Alternative.*

As shown in Figure 3-10, 2030 Daily Boardings, Alightings, and Link Volumes, in this Final EIS, the stations on the Ewa end of the corridor will have high daily ridership. The fixed guideway will allow development in the Ewa area to occur in an organized fashion around a well-defined transit system in a way that will encourage more compact development patterns and better access and, ultimately, use of the transit system. In addition, bus service will be enhanced to provide connections between surrounding communities and fixed guideway stations. All stations will be accessible by walking and bicycling. Future bus routes and frequencies are provided in Appendix D of the Final EIS.

Section 4.19.2 of the Final EIS addresses indirect effects of the Project on development patterns, while cumulative effects are presented in Section 4.19.3, where it is stated: "The bulk of future regional land use changes are expected in the study corridor." Indirect land development would be associated with TOD at the proposed stations, focusing rather than sprawling development.

The regional pollutant burdens estimated in Table 4-15, 2030 Mobile Source Regional Transportation Pollutant Burdens, of the Final EIS are based on VMT and VHT estimates throughout the study area. These estimates are based on regional planning models approved for use by the appropriate agencies. Emission rates are developed through the use of EPA's MOBILE6.2 Emission Factor program which takes into account vehicle mix, speed, meteorological conditions of the study area, and vehicular registration information. The Regional VMT model is reviewed by the State agencies for accuracy. MOBILE6.2 is EPA's model of choice for mobile source emission factor estimates.

The results shown in Table 4-15 of the Final EIS reflect mobile source emission burdens. As stated in the text, additional emissions will be generated due to the power requirements of the fixed guideway system. Table 4-21 indicates that the Project would require 2 percent less overall energy as compared to the No Build Alternative. The Project is expected to result in decreased emissions generated on the roadways along with an increase in power source emissions resulting from fixed guideway energy consumption; however, the overall emission level for the Project is expected to be lower than the No Build Alternative because of reduced traffic congestion compared to the No Build Alternative.

As summarized in Table 4-21, 2030 Summary of Average Daily Transportation Energy Demand, in the Final EIS, the Project is anticipated to reduce daily transportation energy demand by approximately 3 percent compared to the No Build Alternative.

In general, per capita emissions from rail transit are less than a third of those from the automobile. VMT is simply the sum of the length of all highway segments multiplied by the number of vehicles that travel on them over the course of a day. The travel forecasting model performs that calculation each time the model is run. The differences in VMT between alternatives in the analyses are based on the differences in the numbers generated by the model. The same is generally true for VHT and VHD. VMT, VHT, and VHD forecasts have been developed using the travel demand model, which was calibrated and validated to current year *conditions. The model is based upon a set of realistic input assumptions regarding land use and demographic changes between now and 2030 and expected transportation levels-of-service on both the highway and public transit system.*

In response to your comment, the Final EIS was revised to remove the following sentence: "Any measures to reduce automobile travel would reduce air pollutant emissions."

Section 4.10 of the Final EIS addresses noise effects of the Project as related to applicable FTA noise criteria. Maximum noise levels are not an appropriate measure of urban noise impact, as a single very loud event once a week would have less impact than a much quieter event that occurs several times per hour. The analysis is consistent with FTA guidance.

The Final EIS includes additional information about how any severe noise impacts measured after project operation would be treated. As stated in Section 4.10.3 of the Final EIS, the Project will cause no severe noise impacts. Moderate impacts will occur at upper floors of a few high-rise buildings (as shown in Table 4-18 in the Final EIS). With the recommended mitigation in place (sound absorbing material and wheel skirts), the noise analysis indicates that the new noise generated by the Project will be lower than the existing noise levels in most places.

The project design includes an integrated noise-blocking parapet wall at the edge of the guideway structure that extends three feet above the top of the rail. The parapet wall will substantially reduce ground-level noise.

In areas with high-rise apartments and hotels that have lanais above the elevation of and facing the rail, the parapet wall will have a limited benefit (less than a 3-dBA noise reduction) at floors above the level of the guideway. Wheel skirts will increase the benefit from the parapet wall at locations above the elevation of the track. The use of sound-absorptive materials below the tracks in the three areas that will experience moderate noise impacts will reduce the Project noise levels from the upper floors to below the impact level. Once the Project is operating, noise levels will be re-measured to confirm that there are no noise impacts from the Project.

The Project does not propose to convert waterbird habitat, including wetlands, into transportation facilities. The Project will stay within existing roadway corridors along most of its route, except sites planned for the maintenance and storage facility and park-and ride lots. These proposed facilities are not located in close proximity to any waterbird habitat, including wetlands.

Although this Project did not monitor the noise intensity and duration and other environmental impacts associated with construction of existing facilities near waterbird habitat, we anticipate that the Project will be similar and comparable to the construction effects of the existing facilities, although not equivalent in all aspects at all times. The project proposes to use drilled-shaft foundations to reduce or eliminate the need for pile driving.

There are virtually no areas along the proposed corridor that are in close proximity to waterbird habitat, where there has not been major construction of roads, utility lines, bridges, elevated freeways, buildings, and other existing structures. As summarized in Section 4.13.3 of *the Final EIS, there is not expected to be any effect on waterbirds as a result of the Project because over time, the waterbirds will adjust to new structures since all wetlands will remain intact and because the waterbirds have continued to occupy the wetlands after the construction and widening of adjacent roads and highways.*

Operational noise may generate some disturbance adjacent to the guideway when trains are passing; however, the noise will not be a critical factor in endangered waterbird survival since the quality waterbird habitat will remain intact. The noise levels generated by the Project will be similar to the existing highway-noise levels in the corridor. Waterbirds will readily use noisy environments like airports, refineries, and power plants, if habitat is available.

The standard error, not the margin of error, of the following parameters was presented in the Honolulu High-Capacity Transit Corridor Project Ecosystems and Natural Resources Technical Report (2008j): the average number of individuals of each species per station and the average number of species per station or average richness for each corridor area. By providing the standard error of the averages and the sample size, we present what is conventionally required in the presentation of averages. From these statistics, one can derive confidence limits for the estimated population parameter, if desired. Further information about methodology is available in this technical report. The report can be reviewed at the City and County of Honolulu Department of Transportation (DTS) Services office or on the Project website (www.honolulutransit.org).

The true values of the population parameters will almost always remain unknown and, therefore, it is common to estimate the reliability of the estimated parameter by setting confidence limits to it. There is no way to guarantee that the estimate, such as the average number of zebra doves at each point count station, is accurate. We can only express our degree of confidence in the average as a probability.

Field surveys were observations conducted while walking or driving around. We cannot place confidence limits on such observations since the manner in which the observations were conducted does not lend itself to statistical analyses. The presence and quantity of a species are influenced by many factors such as the time of day, season, and a host of environmental conditions including the presence of disturbances that can cause wildlife to temporarily move out of the area. However, these visits generally reveal what can be expected, based on previous anecdotal and scientific records of similar sites and habitats. They are, therefore, important in verifying and checking the species components and environmental characteristics that typify a site, but conclusions derived from these visits must be interpreted conservatively. Reported observations are accurate.

The design of the point counts was to determine what birds were present along the corridor and provide an index of abundance. Field surveys were designed to record the species observed.

As provided in the Honolulu High-Capacity Transit Corridor Project Ecosystems and Natural Resources Technical Report (RTD 2008j): "White terns may be directly affected by the project between Kalihi to University and Waikiki, because this species uses mature canopy trees as roosting and nesting sites almost exclusively. These trees could be affected by the *construction of the fixed guideway system." This report can be found at the DTS office and on the Project website. VanderWerf (2003) indicates that while the white tern population on Oahu is still relatively small and restricted in range, it is increasing and robust. While white tern habitat is limited to large trees in southeastern Oahu, VanderWerf also indicates that if the population grows they may move inland, to other coasts of the island and to other islands. While not as comprehensive, our tern sightings during our observations along the corridor show a similar geographic distribution as VanderWerf found in 2001 to 2003. Therefore, the tern population on Oahu still has area to expand. (Vanderwerf, E.A. 2003. Distribution, abundance, and breeding biology of white terns on Oahu, Hawaii. Wilson Bull., 115(3):258-262.) The only portion of this area that will now be affected by the Project is between Kalihi and Ala Moana Center.*

The procedures for field surveys were presented in Section 3.12 of the Ecosystems and Natural Resources Technical Report (RTD 2008j). Technical Reports can be found at DTS, on the Project website, and other City and County of Honolulu offices.

Scott, et al. (1986), used an 8-minute count period for their variable circular plot method to estimate bird densities in Hawaiian forests. They determined that the interval was long enough to allow an observer to accurately record all birds observed.

The count period was selected as a compromise between efficiency and effectiveness. Point counts by Blondel, et al. (1981), were conducted for 20 minutes, but as the commenter points out, studies by Dettmers, et al. (1999) (not Bartlet et al.) indicate that 5- or 10-minute intervals are adequate.

Scott, J.M., S. Mountainspring, F.L. Ramsey, C.B. Cameron. 1986. "Forest bird communities of the Hawaiian Islands: their dynamics, ecology, and conservation." Studies in Avian Biology, No. 9.

Blondel, J., C. Ferry, and B. Frochot. 1981. "Point counts with unlimited distance." Studies in Avian Biology, No. 6:414-420. Cooper Ornithological Society.

Dettmers, R., D. A. Buehler, J. G. Bartlett, and N. A. Klaus. 1999. "Influence of point count length and repeated visits on habitat model performance." JWM 63(3):815-823.

The authors (Dettmers, et al. 1999) stated that the one visit data did not perform as well in their model. Here is their quote (with italics added): "The current point count recommendations also suggest conducting only 1 visit/point, but we found that models developed from 2 visits/point consistently performed somewhat better than single visit models across all count durations and species. We concluded that conducting 2 visits/point will likely result in habitat models that perform better than models developed from a single visit. However, as with count duration, the potential benefits of increased model performance should be weighed against the additional costs in time and resources required to complete extra visits to each point."

During the alternative routes analyses, each route was surveyed once via the modified point count method using 8-minute count periods. After the route was selected, the preferred *route was re-sampled using the same method resulting in two samples to determine the presence or absence of species and their relative abundance.*

As discussed in Section 3.1.2 of the Honolulu High-Capacity Transit Corridor Project Ecosystems and Natural Resources Technical Report (RTD 2008j), point counts were conducted from 7 a.m. to 11 a.m. All birds heard and seen were recorded and no aural stimuli were used.

After evaluating the Ground Water Impact Assessment completed for the project, the Environmental Protection Agency (EPA) has concurred that the Project should have no significant impacts on groundwater, either during long-term operation of the system or during its construction. The complete Ground Water Impact Assessment and evaluation of other water resources is available to the public as part of the Honolulu High-Capacity Transit Corridor Project Water Resources Technical Report. This report can be found on the Project website and at the City and County of Honolulu and the DTS office.

Permanent BMPs will include vegetated swales, retention ponds, and grit removal structures and are discussed in Section 4.14.3 of the Final EIS. Where it is feasible, an increase in the amount of infiltration of clean water back into the water table aquifer is a design goal.

The Final EIS was revised to remove the following: "Any measure to reduce automobile travel would reduce air pollutant emissions." Minimal pollutants will be generated on the guideway. Due to the power requirements of the guideway, however, emissions will be generated offsite at the powerplant. While these emissions have not been quantified, the energy analysis indicates that the Project will require 3 percent less energy than the No Build Alternative (Table 4-21 in the Final EIS). This analysis accounts for both roadway vehicle propulsion energy and power requirements. Based on this, it is expected that the total emission burden generated by the Project will be lower than the No Build Alternative.

For the purposes of the environmental analysis presented in Section 4.14.2 of the Final EIS, the description of the functions of floodplains are limited to their hydrological functions. Section 4.14.2 also acknowledges the habitat functions of the floodplain. The environmental analysis of habitat functions of aquatic resources, including floodplains, is presented in Section 4.13 of the Final EIS.

The Mode Choice Model Calibration and Validation Report includes a more thorough discussion of the model calibration and validation process. This report can be obtained from DTS or on the Project website.

Transit ridership was forecast using a travel demand forecasting model. The model inputs are based on various inputs compiled from empirical information consistent with FTA guidelines. There is no indication that the energy needed by the fixed guideway will exceed the equivalent amount needed to move the same number of people in cars. In general, the fixed guideway will use less than 30 percent per capita of the amount of energy needed to power the number of cars required to carry the same number of people.

As stated previously, ridership projections for the forecast year of 2030 have been developed using the travel demand model, which was calibrated and validated to current year conditions. The model is based upon a set of realistic input assumptions regarding land use and demographic changes between now and 2030 and expected transportation levels-of-service on both the highway and public transit system. Based upon the model and these key input assumptions, approximately 116,000 trips per day are expected to use the rapid transit system on an average weekday in 2030. Since the Draft EIS was published, the travel demand model has been refined by adding an updated air passenger model, defining more realistic drive access modes to project stations and recognizing a more robust off-peak non-home-based direct demand element based on travel surveys in Honolulu.

The Project is one of the first in the country to design and undertake an uncertainty analysis of this type of travel forecast. The uncertainty analysis evaluates the variability of the forecast by establishing likely upper and lower limits of ridership projections. FTA has worked closely with the City during this work effort. A variety of factors were considered in the uncertainty analysis, including the following:

- *Variations in assumptions regarding the magnitude and distribution patterns of future growth in the Ewa end of the corridor.*
- *The impact of various levels of investment in highway infrastructure.*
- *The expected frequency of service provided by the rapid transit system.*
- *Park-and-ride behavior with the new system in place.*
- *The implications on ridership of vehicle and passenger amenities provided by the new guideway vehicles.*

Given all the factors considered, the anticipated limits for guideway ridership in 2030 are expected to be between 105,000 to 130,000 trips per day, bracketing the official forecast of 116,000 riders a day used for all calculations.

Chapter 3 of the Final EIS describes the results of the analysis which shows the number of passengers that will be carried by the fixed guideway during the a.m. peak period and daily (Figures 3-9 and 3-10 in the Final EIS). Compared to the same number of passengers carried in buses or in cars, there will be fewer vehicles on the road. At the same time, because the demand for fixed guideway service will increase over time throughout the City, there will be additional bus service compared to today.

According to the U.S. Department of Energy, Transportation Energy Data Book, for the year 2006, passenger cars require 3,512 BTUs per passenger mile while transit trains require 2,784 BTUs per passenger mile and transit buses require 4,235 BTUs per passenger mile. Based upon these figures, transit trains are a more energy efficient mode of transportation compared to passenger cars or transit buses. These figures are influenced by the load factor (persons per *vehicle). The load factor for the Department of Energy study for heavy transit trains is 22.5 persons per vehicle. The vehicles proposed for the Honolulu system are capable of carrying between 325 and 500 passengers each (Section 2.5.1 of the Final EIS).*

Vehicle efficiency is factored into energy calculations based on overall fleet performance. In general, performance is assumed to improve over time consistent with fleet requirements imposed by federal law or set by individual states.

The Project will rely on HECO's existing grid to provide propulsion for the trains and system operations for the trains. HECO is moving toward renewable energy generation. As that happens, the fixed guideway will also benefit from such new sources of energy. The 21 proposed stations and maintenance and storage facility will, to the extent possible, incorporate energy efficiency, alternative energy technologies, and other sustainable features into the design. This is being accomplished by including sustainability design criteria into the contract documents for the Project.

This list of methods provided in Section 4.12.3 of the Final EIS to limit the volume of hazardous materials used and the extent of worker exposure provides examples of how worker exposure will be limited. In addition, the Project will comply with applicable rules and regulations, such as Occupational Health and Safety Administration (OSHA) and Hawaii Occupational Safety and Health (HIOSH), and workers will be required to comply with material labels.

As stated previously, the preferred location for the maintenance and storage facility is located near Leeward Community College. If that location is used, the impacts to agricultural land will be significantly reduced.

The Alternatives Screening Memorandum (DTS 2006a) recognized the visually sensitive areas in Kakaako and Downtown Honolulu, including the Chinatown, Hawaii Capital, and Thomas Square/Academy of Arts Special Design Districts. To minimize impacts on historic resources, visual aesthetics, and surface traffic, the screening process considered 15 different combinations of tunnel, at-grade, or elevated alignments between Iwilei and Ward Avenue. Five different alignments through Downtown Honolulu were advanced for further analysis in the Alternatives Analysis, including an at-grade portion along Hotel Street, a tunnel under King Street, and elevated guideways along Nimitz Highway and Queen Street.

The <u>Alternatives Analysis Report</u> (DTS 2006b) evaluated the alignment alternatives based on transportation and overall benefits, environmental and social impacts, and cost considerations. The report found that an at-grade alignment along Hotel Street would require the acquisition of more parcels and affect more burials than any of the other alternatives considered. The alignment with at-grade operation Downtown and a tunnel through the Capital Historic District, in addition to the environmental effects such as impacts to cultural resources, reduction of street capacity, and property acquisition requirements of the at-grade and tunnel sections, would cost more than $300 million more than the least expensive alternative.

The Project's purpose is "to provide high-capacity rapid transit" in the congested east-west travel corridor. The need for the Project includes improving corridor mobility and reliability.

The at-grade alignment would not meet the Project's Purpose and Need because it could not satisfy the mobility and reliability objectives of the Project. Some of the technical considerations associated with an at-grade versus elevated alignment through Downtown Honolulu include the following:

- ***System Capacity, Speed, and Reliability:*** *The short, 200-foot blocks (or less) in Downtown Honolulu would permanently limit the system to two-car trains to prevent stopped trains from blocking vehicular traffic on cross-streets. Under ideal circumstances, the capacity of an at-grade system could reach 4,000 passengers per hour per direction, assuming optimistic five minute headways. Based on travel forecasts, the Project will need to carry approximately 8,000 passengers by 2030. Moreover, the system can be readily expanded to carry over 25,000 in each direction by reducing the interval between trains (headway) to 90 seconds during the peak period. To preserve a comparable system capacity, speed, and reliability, an at-grade alignment would require a fenced, segregated right-of-way that would eliminate all obstacles to the train's passage, such as vehicular, pedestrian, or bicycle crossings. Even with transit signal priority, the at-grade speeds would be slower and less reliable than an elevated guideway. At-grade system would travel at slower speeds due to the shorter blocks, tight and short radius curves in places within the constrained and congested Downtown street network, the need to obey traffic regulations (e.g., traffic signals) along with other vehicles, and potential conflicts with other at-grade activity such as cars, bicyclists, and pedestrians. These effects mean longer travel times and far less reliability than a fully grade-separated system. None of these factors affect an elevated rail system. The elevated rail can travel at its own speed any time of the day regardless of weather, traffic or the need to let cross traffic proceed at intersections.*

- ***Mixed-Traffic Conflicts:*** *With the planned three-minute headways, the short cycle of traffic lights would affect traffic flow and capacity of cross-streets. Furthermore, there would be no option to increase the capacity of the system by reducing the headway to 90 seconds. An at-grade system would also require removal of two or more existing traffic lanes on affected streets. This effect is significant and would exacerbate congestion for those who choose to drive. Congestion would not be isolated to the streets that cross the at-grade alignment but instead would spread throughout Downtown. The Final EIS shows that the Project's impact on traffic will be isolated and minimal, and in fact will reduce system-wide traffic delay by 18 percent compared to the No Build Alternative (Table 3-14 in the Final EIS). That is because the elevated guideway will require no removal of existing travel lanes, while providing an attractive, reliable travel alternative. When traffic slows, or even stops due to congestion or incidents, the elevated rail transit will continue to operate without delay or interruption.*

  The at-grade light rail, with its continuous tracks in-street will create major impediments to turning movements, many of which would have to be closed to *eliminate a serious crash hazard. Even where turning movements are designed to be accommodated, at-grade systems experience significant collision problems. In addition, mixing at-grade fixed guideway vehicles with cars, bicyclists, and pedestrians presents a much higher potential for conflicts compared to grade-separated conditions. Where pedestrian and automobiles cross the tracks in the street network, particularly in areas of high activity (e.g., station areas or intersections), there is a risk of collisions involving trains that does not exist with an elevated system. There is evidence of crashes between trains and cars and trains and pedestrians on other at-grade systems throughout the country. This potential would be especially high in the Chinatown and Downtown neighborhoods, where the number of pedestrians is very high and the aging population presents a particular risk.*

- ***Construction Impacts:*** *Constructing an at-grade rail system could have more effects than an elevated system in a number of ways. The wider and continuous footprint of an at-grade rail system compared to an elevated rail system (which touches the ground only at discrete column foundations, power substations and station accessways) increases the potential of utility conflicts and discovery of sensitive cultural resources. In addition, the extra roadway lanes taken away for the system would result in increased congestion or require that additional businesses or homes be taken to widen the roadway through Downtown. Additionally, the duration of short-term construction impacts to the community and environment with an at-grade system would be considerably greater than with an elevated system. Because of differing construction techniques, more lanes would need to be continuously closed for at-grade construction and the closures would last longer than with elevated construction. This would result in a greater disruption to business and residential access.*

Because it is not feasible for an at-grade system through Downtown to move passengers rapidly and reliably without significant detrimental effects on other transportation system elements (e.g., the highway and pedestrian systems, safety, reliability, etc.), an at-grade system would have a negative system-wide impact that would reduce ridership throughout the system. The at-grade system would not meet the Project's Purpose and Need and, therefore, does not require additional analysis.

As previously discussed, the Project must operate in a protected right-of-way to preserve system speed and reliability and neither automobiles nor pedestrians can be allowed to cross the tracks. For at-grade operation, this would require a fenced right-of-way with no crossings. Because the City does not intend to acquire the right-of-way through the existing farmlands and future development, and because constructing at-grade and fencing the right-of-way would preclude crossing the tracks, an at-grade system would impair the current use and future development of surrounding lands. Any future crossing of the tracks would have to include construction of a bridge over the tracks. The quantity of energy and materials saved would not off-set the loss of access to productive lands.

Areas that are cleared and grubbed will be re-vegetated to the extent possible. This is included in Section 4.18.10 of the Final EIS.

Trees where white terns nest will not be pruned until the young birds have fledged as stated in Section 4.18.8 of the Final EIS.

As presented in Section 4.12.3 of the Final EIS, "The City will decide whether a partial or complete Phase 1 [Environmental Site Assessment (ESA)] is necessary for each property prior to acquisition." The factors that will influence this decision-making process include:

- *Whether or not the parcel is a full or partial acquisition.*
- *Whether or not there is existing documentation regarding contamination investigation and/or documentation of remedial activities having occurred.*
- *The degree to which subsurface construction activities will be performed at that individual parcel.*
- *The type of contaminated media that is expected to be encountered.*

Specific pre-construction activities regarding contaminated media are also discussed in Section 4.18.7 of the Final EIS.

A Phase I site assessment will be performed for those sites receiving a rank of 1 in Section 4.12 of the Final EIS. In addition, the Project will continue to coordinate with the Hawaii Department of Health (HDOH) Hazard Evaluation and Emergency Response (HEER) office to evaluate sites and conditions along the alignment as construction progresses. Initially, contaminated media will be removed to the extent necessary to build the Project. The Project will coordinate with the HEER office regarding any contamination encountered so that the HDOH can appropriately address the contamination. The Project will work with the HDOH for the Project land use.

Contractors will be required to prepare a Solid Waste Management Plan to identify procedures to reduce solid waste. Measures to minimize construction waste will be included in the plan prepared by the contractor.

The Final EIS includes the best available information regarding all resources and effects of the project.

As discussed in Chapter 3, Section 3.2.1, ridership projections for the forecast year of 2030 have been developed using the travel demand model, which was calibrated and validated to current year conditions consistent with FTA guidelines. The model is based upon a set of realistic input assumptions regarding land use and demographic changes between now and 2030 and expected transportation levels-of-service on both the highway and public transit system.

The Project is one of the first in the country to design and undertake an uncertainty analysis of this type of travel forecast. The uncertainty analysis evaluates the variability of the forecast by establishing likely upper and lower limits of ridership projections. FTA has worked closely with the City during this work effort. A variety of factors were considered in the uncertainty analysis, including the following:

- *Variations in assumptions regarding the magnitude and distribution patterns of future growth in the Ewa end of the corridor.*
- *The impact of various levels of investment in highway infrastructure.*
- *The expected frequency of service provided by the rapid transit system.*
- *Park-and-ride behavior with the new system in place.*
- *The implications on ridership of vehicle and passenger amenities provided by the new guideway vehicles.*

The FTA-approved forecasting methodology is not a probabilistic analysis and does not inherently provide margins of error.

The FTA and DTS appreciate your interest in the Project. The Final EIS, a copy of which is included in the enclosed DVD, has been issued in conjunction with the distribution of this letter. Issuance of the Record of Decision under NEPA and acceptance of the Final EIS by the Governor of the State of Hawaii are the next anticipated actions and will conclude the environmental review process for this Project.

Very truly yours,

WAYNE Y. YOSHIOKA
Director

Enclosure